

[illegible]

(2)	53	HISTORY	; Detailed Current Edit History
(3)	71	DECLARATIONS	
(4)	106	OTSSCVT_TU_L	; convert text (unsigned) to longword
(5)	176	OTSSCVT_TI_L	; convert text (integer) to longword


```
0000 1      .TITLE OTSSCVTTIL      ; Convert text (integer) to longword
0000 2      .IDENT /1-009/          ; File: OTSCVTTIL.MAR Edit: SBL1009
0000 3
0000 4
0000 5 *****
0000 6
0000 7      *
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0000 25     *
0000 26     * *****
0000 27
0000 28
0000 29
0000 30     FACILITY: Language independent support library
0000 31     ++
0000 32     ABSTRACT:
0000 33
0000 34     OTSSCVT_TI_L converts a text representation of a decimal value to
0000 35     an internal binary form. It replaces FOR$CNV_IN_I.
0000 36
0000 37     OTSSCVT_TU_L converts a text representation of an unsigned decimal value
0000 38     to internal binary form.
0000 39     --
0000 40
0000 41     VERSION: 1
0000 42
0000 43     HISTORY:
0000 44
0000 45     AUTHOR:
0000 46             Steven B. Lionel, 21-Feb-1979: Version 1
0000 47
0000 48     MODIFIED BY:
0000 49
0000 50
0000 51
```

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0000 53      .SBTTL HISTORY      ; Detailed Current Edit History
0000 54
0000 55
0000 56 : Edit History for Version 1 of OTSSCVT_TI_L
0000 57 :
0000 58 : 1-001 - Adapted from FOR$CNV IN I version 1-009. SBL 21-Feb-79
0000 59 : 1-002 - Added V_SKIPTABS. SBL 11-JUL-1979
0000 60 : 1-003 - Fix bug in overflow test. SBL 12-July-1979
0000 61 : 1-004 - Make V_SKIPTABS bit 4 to conform with floating. SBL 30-Aug-1979
0000 62 : 1-005 - Fix bug in tab skipping. Add standard module headers.
0000 63 : SBL 11-Sept-1979
0000 64 : 1-006 - Do correct thing if value size is incorrect. SBL 25-Feb-1980
0000 65 : 1-007 - REALLY do correct thing if value size is incorrect. Previous code
0000 66 : went into infinite loop. SBL 5-Jan-1981
0000 67 : 1-008 - Give error if character value greater than 127 found.
0000 68 : SPR 11-52485 SBL 29-Dec-1982
0000 69 : 1-009 - Add OTSSCVT_TU_L. SBL 27-Apr-1983

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0000 71 .SBTTL DECLARATIONS
0000 72 :
0000 73 : INCLUDE FILES:
0000 74 :
0000 75 :
0000 76 :
0000 77 : EXTERNAL SYMBOLS:
0000 78 :
0000 79 .DSABL GBL
0000 80 .EXTRN OTSS_INPCONERR
0000 81 :
0000 82 :
0000 83 : MACROS:
0000 84 :
0000 85 :
0000 86 :
0000 87 : PSECT DECLARATIONS:
0000 88 :
0000 89 :
00000000 90 .PSECT _OTSS$CODE PIC, SHR, LONG, EXE, NOWRT
0000 91 :
0000 92 :
0000 93 :
0000 94 : EQUATED SYMBOLS:
0000 95 :
0000 96 :
0000007C 0000 97 REGMASK = ^M<R2, R3, R4, R5, R6>
0000001F 0000 98 V_NEGATIVE = 31 ; 31th bit position of flag register
0000001E 0000 99 V_UNSIGNED = 30 ; indicates OTSS$CVT_TU_L
0000 100 :
0000 101 :
0000 102 : OWN STORAGE:
0000 103 :
0000 104 :

```



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0000 106      .SBTTL OTSSCVT_TU_L      ; convert text (unsigned) to longword
0000 107
0000 108      :++
0000 109
0000 110      FUNCTIONAL DESCRIPTION:
0000 111
0000 112      OTSSCVT_TU_L converts an ASCII string containing a text
0000 113      representation of an unsigned decimal number to internal binary form.
0000 114
0000 115
0000 116      The text representation converted is:
0000 117      <0 or more blanks>
0000 118      <0 or more ASCII digits from '0' through '9'>
0000 119      <end of string>
0000 120
0000 121      Notes:
0000 122      1. If caller flag V_SKIPBLANKS is clear, then spaces are
0000 123      equivalent to '0'. If set, spaces are ignored.
0000 124      2. If caller flag V_SKIPTABS is clear, then tab characters
0000 125      are illegal. If set, tabs are ignored.
0000 126
0000 127      CALLING SEQUENCE:
0000 128
0000 129      status.wlc.v = OTSSCVT_TU_L (in_str.rt.dx, value.wx.r
0000 130      [, value_size.rt.v [, caller_flags.rlu.v]])
0000 131
0000 132      INPUT PARAMETERS:
0000 133
00000004 0000 134      in_str = 4      ; Input string by descriptor
0000000C 0000 135      value_size = 12 ; Size of value in bytes
00000010 0000 136      ; Must be 1, 2 or 4.
00000000 0000 137      caller_flags = 16 ; Caller flags by value
00000000 0000 138      V_SKIPBLANKS = 0  ; If set, blanks are ignored.
0000 139      ; Else they are treated as
0000 140      ; zeroes.
00000004 0000 141      V_SKIPTABS = 4    ; If set, tabs are ignored.
0000 142      ; Else they are invalid.
0000 143
0000 144      IMPLICIT INPUTS:
0000 145
0000 146      NONE
0000 147
0000 148      OUTPUT PARAMETERS:
0000 149
00000008 0000 150      value = 8      ; Output value by reference
0000 151
0000 152      IMPLICIT OUTPUTS:
0000 153
0000 154      NONE
0000 155
0000 156      COMPLETION CODES:
0000 157
0000 158      SSS_NORMAL - Successful completion
0000 159      OTSS_INPCONERR - There was an invalid character in the input
0000 160      string, the value overflowed the range allowed,
0000 161      or value_size was invalid. The result "value" is
0000 162      set to zero, unless value_size is invalid, in which
  
```

```

0000 163 ;
0000 164 :
0000 165 : SIDE EFFECTS:
0000 166 :
0000 167 : NONE
0000 168 :
0000 169 :--
0000 170 :
007C 0000 171 .ENTRY OTSSCVT_TU_L, REGMASK
56 D4 0002 172 CLRL R6 ; Clear flags mask
1E E3 0004 173 BBCS #V_UNSIGNED, R6, COMMON_ENTRY ; Set UNSIGNED and join common code
0008 174

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C 10

16-SEP-1984 00:29:53 VAX/VMS Macro V04-00
6-SEP-1984 11:13:46 [LIBRTL.SRC]OTSCVTTIL.MAR;1 Page 6
(5)

```
0008 176      .SBTTL OTSSCVT_TI_L      ; convert text (integer) to longword
0008 177
0008 178      :++
0008 179
0008 180      FUNCTIONAL DESCRIPTION:
0008 181
0008 182      OTSSCVT_TI_L converts an ASCII string containing a text
0008 183      representation of a decimal number to internal binary form.
0008 184
0008 185      This routine supports FORTRAN I input format conversion as well
0008 186      as similar types for other languages.
0008 187
0008 188      The text representation converted is:
0008 189      <0 or more blanks>
0008 190      <'+' , '-' or nothing>
0008 191      <0 or more ASCII digits from '0' through '9'>
0008 192      <end of string>
0008 193
0008 194      Notes:
0008 195      1. If caller flag V_SKIPBLANKS is clear, then spaces are
0008 196      equivalent to '0'. If set, spaces are ignored.
0008 197      2. If caller flag V_SKIPTABS is clear, then tab characters
0008 198      are illegal. If set, tabs are ignored.
0008 199
0008 200      CALLING SEQUENCE:
0008 201
0008 202      status.wlc.v = OTSSCVT_TI_L (in_str.rt.dx, value.wx.r
0008 203      [, value_size.rt.v [, caller_flags.rlu.v]])
0008 204
0008 205      INPUT PARAMETERS:
0008 206
00000004 0008 207      in_str = 4      ; Input string by descriptor
0000000C 0008 208      value_size = 12 ; Size of value in bytes
0008 209      ; Must be 1, 2 or 4.
00000010 0008 210      caller_flags = 16 ; Caller flags by value
00000000 0008 211      V_SKIPBLANKS = 0  ; If set, blanks are ignored.
0008 212      ; Else they are treated as
0008 213      ; zeroes.
00000004 0008 214      V_SKIPTABS = 4   ; If set, tabs are ignored.
0008 215      ; Else they are invalid.
0008 216
0008 217      IMPLICIT INPUTS:
0008 218
0008 219      NONE
0008 220
0008 221      OUTPUT PARAMETERS:
0008 222
00000008 0008 223      value = 8      ; Output value by reference
0008 224
0008 225      IMPLICIT OUTPUTS:
0008 226
0008 227      NONE
0008 228
0008 229      COMPLETION CODES:
0008 230
0008 231      SS$ NORMAL      - Successful completion
0008 232      OTSS_INPCONERR - There was an invalid character in the input
```

0008 233 ; string, the value overflowed the range allowed,
0008 234 ; or value_size was invalid. The result "value" is
0008 235 ; set to zero, unless value_size is invalid, in which
0008 236 ; case "value" is unpredictable.
0008 237
0008 238 SIDE EFFECTS:
0008 239
0008 240 NONE
0008 241
0008 242 :--
0008 243
0008 244 FOR\$CNV_IN I:: OTSSCVT_TI_L, REGMASK ; for compatibility
007C 0008 245 .ENTRY
000A 246
56 D4 000A 247 CLRL R6 ; clear flags
50 04 BC 7D 000C 248 COMMON_ENTRY:
000C 249 MOVQ @in_str(AP), R0 ; R0 = width of the input string
0010 250 ; R1 = address of the input string
04 54 7C 0010 251 CLRQ R4 ; R4/R5 = ACC = 0
04 6C 91 0012 252 CMPB (AP), #<caller_flags/4> ; Optional argument present?
04 04 19 0015 253 BLSS 5\$; No
56 10 AC 90 0017 254 MOVB caller_flags(AP), R6 ; Yes, move it
001B 255
001B 256
001B 257 ;+
001B 258 ; Find the first non-blank character. Process the sign, if present,
001B 259 ; and if we are not doing unsigned conversion.
001B 260 ;-
001B 261
61 50 20 3B 001B 262 5\$: SKPC #^A/ /, R0, (R1) ; skip blanks
001F 263 ; R0 = #CHAR REMAINING
001F 264 ; R1 = POINTER_TO_INPUT
001F 265 ; Z bit is set if R0 = 0
001F 266 BEQL DONE ; branch to DONE if no non-blank
0B 56 04 E1 0021 267 BBC #V_SKIPTABS, R6, 7\$; ignoring tabs?
09 61 91 0025 268 CMPB (R1), #^X09 ; Yes, is it a tab?
06 12 0028 269 BNEQ 7\$; If not, continue
51 D6 002A 270 INCL R1 ; Bump pointer
50 D7 002C 271 DECL R0 ; Decrement counter
EB 11 002E 272 BRB 5\$; Look for more.
12 56 1E E0 0030 273 7\$: BBS #V_UNSIGNED, R6, DIGIT_LOOP ; If unsigned, skip sign test
2D 61 91 0034 274 CMPB (R1), #^A/-/ ; is the current char a "-" sign?
04 12 0037 275 BNEQ 10\$; no, branch to 10\$
05 56 1F E3 0039 276 BBBS #V_NEGATIVE, R6, DECIMAL ; set negative flag and continue
003D 277
003D 278
2B 61 91 003D 279 10\$: CMPB (R1), #^A/+/
04 12 0040 280 BNEQ DIGIT_LOOP ; is current char a "+" sign?
0042 281 ; no, branch to check if it is a digit
0042 282 ;+
0042 283 ; skip over "-" or "+" sign
0042 284 ;-
0042 285
0042 286 DECIMAL:
50 D7 0042 287 DECL R0 ; R0 = #CHAR REMAINING
51 D6 0044 288 INCL R1 ; R1 = POINTER_TO_INPUT


```
0046 290 :+
0046 291 : Loop to collect digits, treat blanks as zeroes, until the string is exhausted
0046 292 : then branch to DONE
0046 293 :-
0046 294
0046 295 DIGIT_LOOP:
50 D7 0046 296 DECL R0 ; R0 = #CHAR REMAINING
38 19 0048 297 BLSS DONE ; branch to DONE if the string is exhausted
004A 298
004A 299 :+
004A 300 : Get next character, converting blanks into zeroes unless V_SKIPBLANKS set.
004A 301 :-
004A 302
53 81 9A 004A 303 MOVZBL (R1)+, R3 ; get current char and adjust POINTER_TO_INP
20 53 91 004D 304 CMPB R3, #^A/ / ; compare char with blank
0B 13 0050 305 BEQL 10$ ; possibly ignore or set to 0
OE 56 04 E1 0052 306 BBC #V_SKIPTABS, R6, CHECK_DIGIT ; not ignoring tabs?
09 53 91 0056 307 CMPB R3, #^X09 ; Tab?
EB 13 0059 308 BEQL DIGIT_LOOP ; Yes, ignore it
07 11 005B 309 BRB CHECK_DIGIT ; Continue
E5 56 00 E0 005D 310 10$: BBS #V_SKIPBLANKS, R6, DIGIT_LOOP ; ignore if V_SKIPBLANKS set
53 30 D0 0061 311 MOVL #^A/0/, R3 ; convert blank into zero
0064 312
0064 313 :+
0064 314 : Check if current char is a legal digit, accumulate it in ACC if yes and
0064 315 : then branch to DIGIT_LOOP if no overflow. Otherwise fall into ERROR.
0064 316 :-
0064 317
0064 318 CHECK_DIGIT:
53 30 C2 0064 319 SUBL #^A/0/, R3 ; R3 = ASCII(current_char) - ASCII('0')
OE 19 0067 320 BLSS ERROR ; Error if less than '0'
09 53 D1 0069 321 CMPL R3, #9 ; Is it greater than '9'?
09 14 006C 322 BGTR ERROR ; If so, error
54 53 54 0A 7A 006E 323 EMUL #10, R4, R3, R4 ; #10 = radix
0073 324 ; R4 = LP(ACC), only LP(ACC) will be used in
0073 325 ; since R5 (=HP(ACC)) must be zero
0073 326 ; R3 = current digit
0073 327 ; R4/R5 = ACC = ACC * radix + current_digit
55 D5 0073 328 TSTL R5 ; compare R5 with 0, since a non-zero value
0075 329 ; in HP(ACC) means overflow
CF 13 0075 330 BEQL DIGIT_LOOP ; if no overflow branch back to get more
0077 331 ; character. Otherwise fall into ERROR
```



```

0077 333 :+
0077 334 : ERROR return
0077 335 :-
0077 336
50 00000000'8F D0 0077 337 ERROR: MOVL #OTSS_INPCONERR, R0 ; R0 = error return code
54 D4 007E 338 CLRL R4 ; zero result
21 11 0080 339 BRB EXIT ; exit with zero and error
0082 340
0082 341 :+
0082 342 : DONE
0082 343 :-
0082 344
0082 345 DONE: MOVL #1, R0 ; return function value of SS$NORMAL
12 50 01 D0 0082 346 BBC #V_NEGATIVE, R6, 10$ ; branch if '-' wasn't seen
56 1F E1 0085 347 CMPL R4, #X80000000 ; is it 2**31?
80000000 8F D1 0089 348 BEQL EXIT ; yes, already correct!
11 13 0090 349 TSTL R4 ; test for overflow
54 D5 0092 350 BLSS ERROR ; if already negative, overflow
54 54 CE 0096 351 MNEGL R4, R4 ; answer is -R4
08 11 0099 352 BRB EXIT ; Store result
04 56 1E E0 009B 353 10$: BBS #V_UNSIGNED, R6, EXIT ; Skip overflow test if unsigned
54 D5 009F 354 TSTL R4 ; Overflow?
D4 19 00A1 355 BLSS ERROR ; If negative, yes
03 6C 91 00A3 356 EXIT: CMPB (AP), #<value_size/4> ; Is arg present?
22 19 00A6 357 BLSS 40$ ; If not, assume longword
52 0C AC D0 00A8 358 MOVL value_size(AP), R2 ; Get value size in R2
1C 13 00AC 359 BEQL 40$ ; If zero, assume 4
04 52 D1 00AE 360 CMPL R2, #4 ; Is it a longword?
17 13 00B1 361 BEQL 40$ ; Yes
02 52 D1 00B3 362 CMPL R2, #2 ; Word?
0A 13 00B6 363 BEQL 20$ ; Yes
15 1A 00B8 364 BGTRU BADSIZE ; Byte if LSS, bad otherwise
08 BC 54 F6 00BA 365 CVTLB R4, @value(AP) ; Convert byte
B7 1D 00BE 366 BVS ERROR ; Overflow?
0C 11 00C0 367 BRB 50$ ; No, exit
08 BC 54 F7 00C2 368 20$: CVTLW R4, @value(AP) ; Convert to word
AF 1D 00C6 369 BVS ERROR ; Overflow?
04 11 00C8 370 BRB 50$ ; No, exit
08 BC 54 D0 00CA 371 40$: MOVL R4, @value(AP) ; Move longword
04 00CE 372 50$: RET
00CF 373
00CF 374 :+
00CF 375 : Come here when value_size is incorrect.
00CF 376 :-
00CF 377
00CF 378 BADSIZE:
50 00000000'8F D0 00CF 379 MOVL #OTSS_INPCONERR, R0 ; Input conversion error
04 00D6 380 RET
00D7 381
00D7 382 .END
```

BADSIZE	000000CF	R	01
CALLER_FLAGS	= 00000010		
CHECK_DIGIT	00000064	R	01
COMMON_ENTRY	0000000C	R	01
DECIMALC	00000042	R	01
DIGIT_LOOP	00000046	R	01
DONE	00000082	R	01
ERROR	00000077	R	01
EXIT	000000A3	R	01
FOR\$CNV_IN_I	00000008	RG	01
IN_STR	= 00000004		
OT\$SCVT_TI_L	00000008	RG	01
OT\$SCVT_TU_L	00000000	RG	01
OT\$ INPCONERR	*****	X	00
REGMASK	= 0000007C		
VALUE	= 00000008		
VALUE_SIZE	= 0000000C		
V_NEGATIVE	= 0000001F		
V_SKIPBLANKS	= 00000000		
V_SKIPTABS	= 00000004		
V_UNSIGNED	= 0000001E		

+-----+
! Psect synopsis !
+-----+

PSECT name	Allocation	PSECT No.	Attributes																
ABS	00000000 (0.)	00 (0.)	NOPI	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE						
OT\$CODE	000000D7 (215.)	01 (1.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG						

+-----+
! Performance indicators !
+-----+

Phase	Page faults	CPU Time	Elapsed Time
-----	-----	-----	-----
Initialization	30	00:00:00.04	00:00:02.60
Command processing	107	00:00:00.32	00:00:02.57
Pass 1	75	00:00:00.52	00:00:02.71
Symbol table sort	0	00:00:00.01	00:00:00.01
Pass 2	74	00:00:00.46	00:00:02.43
Symbol table output	4	00:00:00.02	00:00:00.02
Psect synopsis output	2	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	294	00:00:01.38	00:00:10.35

The working set limit was 1050 pages.
5207 bytes (11 pages) of virtual memory were used to buffer the intermediate code.
There were 10 pages of symbol table space allocated to hold 21 non-local and 8 local symbols.
382 source lines were read in Pass 1, producing 14 object records in Pass 2.
0 pages of virtual memory were used to define 0 macros.

! Macro library statistics !

Macro library name

Macros defined

_\$255\$DUA28:[SYSLIB]STARLET.MLB;2

0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:OTSCVTTIL/OBJ=OBJ\$:OTSCVTTIL MSRC\$:OTSCVTTIL/UPDATE=(ENH\$:OTSCVTTIL)

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VAX/VMS V4.0

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